

Commercial Ambient LED Lighting Solutions (Translation: Recessed 2x2 and 2x4 Troffers)



DOE SSL Market Introduction Workshop
July 2012

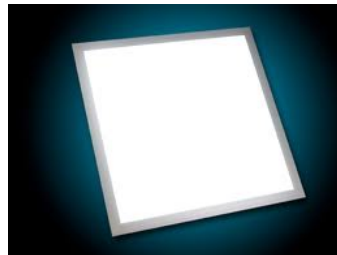
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“Type A” Project Luminaires



Incumbent recessed troffers

- Prismatic lenses
- Parabolic louvers
- “Volumetric” or “High-efficiency” or “Non-planar”
- Planar or non-planar diffusers
- Perforated metal baskets



Interest in switching to LED for

- New projects
- Remodel projects in existing spaces
- Retrofit/refreshing of existing fixtures



*Dedicated
LED
troffers*



*LED
troffer kits*



*LED T8
replacement
lamps*



What's a designer to do????

How do you choose??

What are the evaluation criteria??



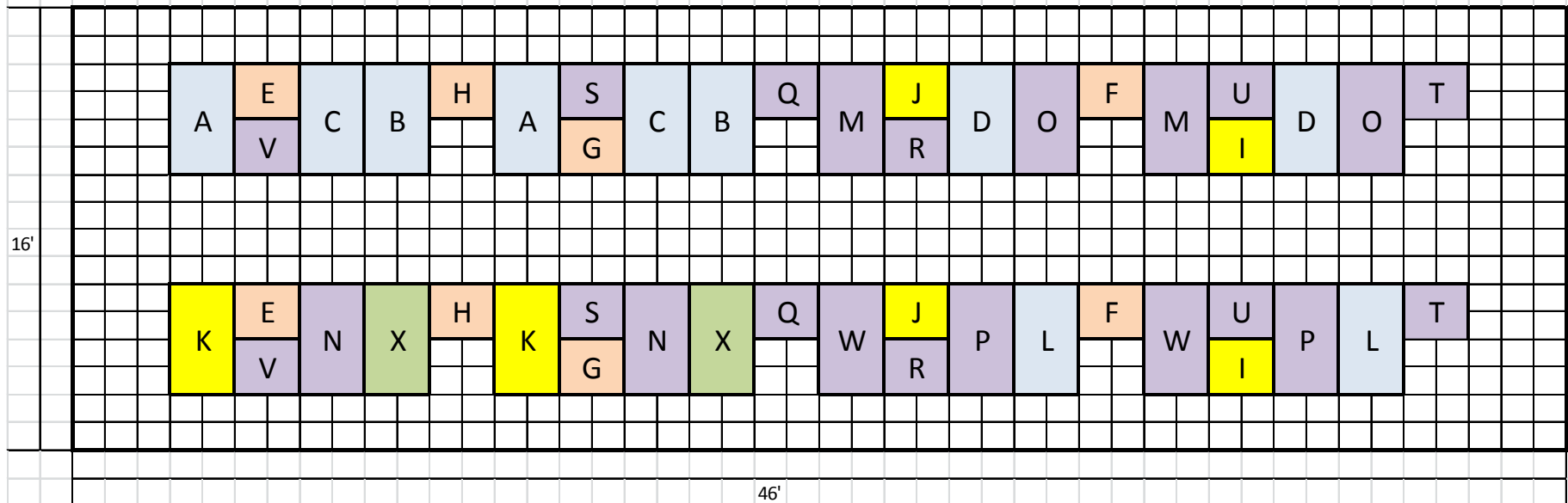
CALiPER TROFFER STUDY

In conjunction with IALD using ARRA funding...

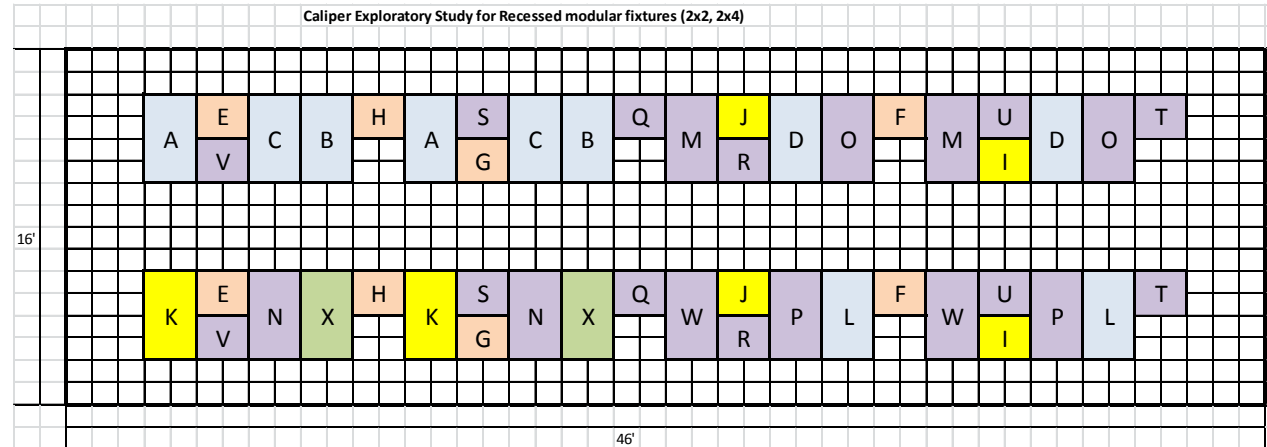
Build a real room at Intertek Portland OR

- Install 24 pairs of recessed luminaires
- Install dimming controls
- Invite 16 designers/engineers to observe and brainstorm and comment
- Get feedback from non-lighting experts as well

Caliper Exploratory Study for Recessed modular fixtures (2x2, 2x4)



| | | |
|---|-----|------------------|
| A | 2x4 | T8 LED tubes |
| B | 2x4 | T8 LED tubes |
| C | 2x4 | T8 LED tubes |
| D | 2x4 | T8 LED tubes |
| E | 2x2 | LED Retrofit kit |
| F | 2x2 | LED Retrofit kit |
| G | 2x2 | LED Retrofit kit |
| H | 2x2 | LED Retrofit kit |
| I | 2x2 | Fluor BK |
| J | 2x2 | Fluor BK |
| K | 2x4 | Fluor BK |
| L | 2x4 | T8 LED tubes |
| M | 2x4 | New LED troff |
| N | 2x4 | New LED troff |
| O | 2x4 | New LED troff |
| P | 2x4 | New LED troff |
| Q | 2x2 | New LED troff |
| R | 2x2 | New LED troff |
| S | 2x2 | New LED troff |
| T | 2x2 | New LED troff |
| U | 2x2 | New LED troff |
| V | 2x2 | New LED troff |
| W | 2x4 | New LED troff |
| X | 2x4 | LED Retrofit kit |



Criteria for 2x2 and 2x4 product selection

- Designed for acoustical ceiling mounting
- Target ~4000K, CRI>80; R9>0
- ~2500-6000 fixture lumens
- 0-10V dimming drivers where available
- Range of optics, prices, and qualities
- Received in time (started ordering mid-May)

Results?

- 16 enlightened, influential designers/engineers/specifiers
- Comparison of knowledgeable and naïve observers
- Criteria for evaluating luminaires for CALiPER
- Better understanding of predictive metrics for lighting quality
- Published results on dimming, flicker, glare, distribution, etc.
- Feedback to manufacturers on LED lamp, kit, and fixture design
- Will inform future CALiPER investigations on Type A luminaires, kits, and LED tubes
- CALiPER report due February 2013

STAY TUNED!



<http://www1.eere.energy.gov/buildings/ssl/m/caliper.html>

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Pesky Questions, Please